WHAT IS CLAIMED IS:

1. A semiconductor device comprising a semiconductor chip having a plurality of film electrodes on a rear surface of said semiconductor chip and a plurality of protruding electrodes on a front surface of said semiconductor chip, an insulator resin film covering said semiconductor chip while exposing said film electrodes and a top portion of each of said protruding electrodes, and a conductive film formed on said top portion of said protruding electrodes and configured as a plurality of interconnect lines.

2. The semiconductor device as defined in claim 1, wherein said semiconductor chip is mounted on a printed circuit board, with said rear surface opposing said printed circuit board.

3. The semiconductor device as defined in claim 1, wherein said interconnect lines are connected to respective terminals of the printed circuit board by wire bonding.

4. The semiconductor device as defined in claim 1, wherein each of said protruding electrodes has a base portion having a diameter larger than other portion thereof, and said semiconductor chip is sandwiched between a pair of printed

circuit boards.

5. The semiconductor device as defined in claim 1, wherein a portion of a side surface of said semiconductor chip is exposed from said insulator resin film.

6. A method for fabricating a semiconductor device comprising the steps of: adhering onto an adhesive sheet a semiconductor wafer having a plurality of film electrodes on a rear surface of said semiconductor wafer and a plurality of protruding electrodes on a front surface of said semiconductor wafer, with said rear surface being in contact with said adhesive sheet; dicing said semiconductor wafer to form a plurality of semiconductor chips each including a plurality of said film electrodes and a plurality of said protruding electrodes; extending said adhesive sheet to increase a gap between each two of said semiconductor chips; applying liquid insulator resin to cover said semiconductor chips on said adhesive sheet and fill the gaps therebetween; curing said liquid insulator resin; removing a portion of said insulator resin to expose top surfaces of said protruding electrodes from said insulator resin; forming a conductive film on said top surfaces of said protruding electrodes and on said insulator resin; and dicing said insulator resin and said adhesive sheet to separate said semiconductor chips.

7. The method as defined in claim 6, wherein said adhesive sheet is a transparent sheet having an extension property and covered with a UV-cured adhesive layer.

8. The method as defined in claim 6, wherein said insulator resin is a UV-cured resin.

9. The method as defined in claim 6, wherein said removing step is a grinding step.

10. The method as defined in claim 6, wherein each of said protruding electrodes has a base portion having a larger diameter than other portion having a bump shape.

11. The method as defined in claim 6, wherein said removing step is a laser irradiation step.

12. The method as defined in claim 6, wherein said protruding electrodes are electrically connected to said conductive film via a low-melting-point metal or alloy.

13. The method as defined in claim 6, wherein said semiconductor wafer dicing step is a half-cut dicing step.